some violence and oscillation due to their momentum; but those inside the contour A B C D will continue moving for a little longer. The outside layer of this region will slip in such direction as to illustrate the direct induced current at "break," and will begin to stop first; the slip and the stop gradually penetrating inwards, just as happened during the inverse process, until all trace of rotation ceases. This inverse slipping process is the direct induced current at "break."

Through a perfect conductor the disturbance could never pass, for the slip of the dielectric wheels on its outer skin would be perfect, and would never penetrate any deeper. A superficial current lasting for ever, or rather as long as the magnetic field (the rotation of the dielectric wheels) lasts, is all that would be excited, and it would be a perfect magnetic screen to any dielectric beyond and inclosed by it. OLIVER J. LODGE.

(*To be continued.*)

THE BIRDS'-NEST OR ELEPHANT ISLANDS OF THE MERGUI ARCHIPELAGO.

OF the geological structure of this group of islands lying off the coast of British Burmah not much is yet known. Our readers will probably be interested in the following account of a visit to one portion of the archipelago, furnished by Commander Carpenter, R.N., to the Hydrographer of the Admiralty, to whose kindness we are indebted for permission to publish it.

The remarkable group of islands called by the Burmans Ye-ei-gnet-thaik (*lit.* sea-birds' nests) is located on the south-east side of Domel Island, one of the largest of the Mergui Archipelago. It is composed of six marble rocks, the highest and largest of which, 1000 feet in altitude, and about one mile in length, is oval-shaped, and rises very abruptly out of a depth of only 5 fathoms. The islands present a very striking appearance, particularly if the weather is hazy, when they are not seen until within five or six miles, for then they gradually loom out through the mist like some huge misshapen monsters that have strayed away from civilization. Their sides are partly clothed with vegetation wherever a break in the limestone has left a cleft in which moisture and dust can lodge. Conspicuous because of its leaning attitudes is a species of tree-fern which grows at any angle, but only above a height of 200 feet from the water. The face of the rocks is reddish, partly from weathering and partly from soil, and where cliffs exist the most beautiful though uncouth stalactites have been formed, showing grotesque and snake-like patterns varying in hue and shape till one feels as if in some enchanted land. But the great feature of the group is the birds'-nest caverns, which as a rule open into the sea, the entrance being below high-water mark; fortunately I visited them at spring tides, and had plenty of leisure to examine each cavern at low water during two days.

At the south end of the largest island stands a "ninepin" of gray marble 370 feet high, almost separated from the rest. It is hollow, like a huge extinguisher, and the polished light-blue and yellow sides of the interior seem to point to its having been hollowed by the swell of the sea, which on entering the cave would probably expend its force vertically, the mouth of the cave being open to the direction of the strongest seas. This sea-stack forms the western point of a nearly circular cove, 360 yards in diameter, which runs back into the island, and the sides of the cove rise steeply though not perpendicularly from it. At the head of the cove is a perpendicular wall of rock over which can just be seen the 1000-foot summit in the distance.

At half-tide a tunnel, passable for a canoe, opens under the wall of rock at the head of the cove, but a ship's gig can only enter within an hour of low-water spring tides. This tunnel has a roof covered with large stalactitic knobs except at its narrowest part, where it is apparently scoured smooth by the action of the tidal rush. It is about 250 feet long, and 4 feet deep at low water (the rise and fall of the tide being 16 feet), and is covered with dripping marine life, corallines, small corals, Comatulæ, sponges, and sea-horses. Passing through this submarine passage one emerges into another circular crater-shaped basin with perpendicular sides. This basin is only open to the sky; caves here and there enter it, some of which may perhaps lead by long tunnels to other basins. Water was running freely into it from the foot of the cliffs in several places as the tide fell, showing that water spaces existed, and strange gurgling sounds as of air taking the place of water could be heard now and again. There were hardly any signs of the place being frequented by man except here and there the worn ropes of birds'-nest climbers. It was either not the season for the swallows, or they had deserted the islands, for none were seen. A little reddish guano was noticed in some of the caves. There can be but little traffic through the tunnel by which we entered, for the delicate growth on its sides was hardly injured.

On the west side of the northern large island a lofty cavern is connected at half-tide with another nearly circular basin of about the same size as that we have just described, but in this case the basin also opens into the sea on the east side of the island. After contemplating the cliffs that surround these basins, the general circular contour of the ridges of the islands, the undermining action of the sea at the water-line, which causes in some places an overhang of 20 to 25 feet, and the softening of the marble surface of the cavern roofs by moisture, the conviction gradually forces itself on the mind that these circular basins were themselves at one time the floors of huge caverns; that in days gone by the islands rose far higher, with cavern piled on cavern, and that the work of disintegration by solution and wave-action is slowly going on, pulling down these marble monuments of a giant age. Indeed, here and there a fall of blocks has occurred lately, and, as there is no shoal off the base of the slip, the destructive action is probably rapid.

A small oyster covers the rocks at the water-line. A handsome kingfisher was secured and sent to the British Museum. A few doves and an eagle or two were the only other birds seen, besides a small bat in the caves. By the position of the nest-seekers' ropes, the swallows appear to build only on the roofs of the caves. The islands appeared to be entirely composed of a blue-tinted marble. A vessel could lie alongside them and lower the cut blocks straight into her hold, but it is probably of too poor a quality to be worth shipment.

ALFRED CARPENTER.

PRIZE FOR RESEARCHES IN NATURAL HISTORY.

IN accordance with the intentions of the founder, the Committee of Schnyder of Wartensee's Foundation, Zürich, have decided to offer for the year 1890 a prize for the following researches in natural history:—

"New investigations are desired regarding the relation which the formation of the bones bears to the statics and mechanics of the vertebrate skeleton. The results of the investigations as a whole are to be demonstrated in detail by way of example on the skeleton of a definite species."

The conditions are as follow:—

Art. 1. Competitors for the prize must send in their work in German, French, or English, by September 30, 1890, at the latest, to the address given below in Art. 6.

Art. 2. The award will be made by a Committee consisting of the following gentlemen:—Prof. Hermann von

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Meyer, Zürich; Prof. L. Rütimeyer, Basle; Prof. H. Strasser, Berne; Prof. Otto Mohr, Dresden; and Prof. Albert Heim, of Zürich, representing the Committee offering the prize.

Art. 3. The judges are authorized to award a first prize of two thousand francs; and a further sum of one thousand francs is placed at their disposal for distribution in minor prizes according to their discretion.

Art. 4. The work awarded the first prize becomes the property of the Foundation of Schnyder of Wartensee, which will arrange with the author regarding the publication of the same.

Art. 5. Each competing work must bear on the title-page a distinguishing motto, and must be accompanied by a sealed envelope containing the name of the author, and bearing on the outside the same motto.

Art. 6. Competing works are to be sent in by the date named in Art. 1, to the following address: "An das Präsidium des Conventes der Stadtbibliothek in Zürich (betreffend Preisaufgabe der Stiftung von Schnyder von Wartensee für 1890)."

NOTES.

THE death of Sir Henry Maine, F.R.S., has created a great blank in the serious literature of England. He was the first Englishman who applied to the study of law and early institutions the rigid methods of science, and the results at which he arrived marked an epoch in the investigation of these subjects. His literary style, combining as it did extraordinary vigour, lucidity, and grace, was scarcely less remarkable than his grasp of far-reaching principles. He died suddenly, of apoplexy, at Cannes, on Friday evening last. He was in his sixty-sixth year.

IN a letter received from Mr. John Whitehead, dated Labuan December 13, 1887, that gentleman writes:—"To-day or to morrow I start for Kina Balu, and I hope to make this a famous and last expedition into Borneo, for I really am in wonderful health considering everything, but at the same time I am rather tired of Borneo, with its fevers, heat, and mosquitoes. I hope to be back in England in August and September. I do not like to brag of what I hope to do, as things are so uncertain. Natives may refuse to help me, and may perhaps attack me, for the country round this fine mouutain is by no means settled." On the last occasion of his visiting Kina Balu a year ago, Mr. Whitehead was only able to remain a month upon the mountain, but he discovered nineteen new species of birds in that short time, some of them being really wonderful novelties. He now hopes to remain for at least six months, and this he will doubtless be able to do, if he can secure supplies for his hunters, and keep open his communication with Labuan.

MR. WHITEHEAD'S collections from the island of Palawan have now arrived in this country, and a brief account of them will appear in the April number of the *Ibis*. This island has already been visited by Prof. Steere, Mr. Alfred Everett, and Mr. E. Lemprière, all of whom made collections in the neighbourhood of Puerto Princesa. Mr. Whitehead's labours were also confined to the vicinity of this post, as he was prevented from visiting the interior. He has succeeded, however, in procuring specimens of every species met with by the three travellers above-mentioned, and has besides obtained about sixty additional species, several being new to science.

THE Council of the Royal Meteorological Society have arranged to hold, at 25 Great George Street, Westminster, on March 20–23 next, an Exhibition of Apparatus connected with Atmospheric Electricity, including lightning-conductors, photographs of lightning, and damaged objects. The Committee will also be glad to show any new meteorological instruments or apparatus invented or first constructed since last March; as well as photographs and drawings possessing meteorological interest.

A FRIENDLY meeting of employers and working men, to discuss the best means of obtaining technical education, will be held at the Royal Victoria Hall, Waterloo Bridge Road, on Wednesday, February 15, at eight o'clock. The chair will be taken by Sir Douglas Galton. This meeting has been arranged in consequence of the great interest shown in a similar meeting held at the same place on December 14. The speakers will be limited to ten minutes, and those who wish to speak must send in their names the day before the meeting.

THE new American Folk-Lore Society was definitely organized at a meeting held at Harvard College on January 4. The object of the Society is the study of folk-lore in general, and especially of folk-lore in North America. The first President is Prof. F. J. Child, of Harvard, and the acting Secretary is Mr. W. W. Newell, of Cambridge, Mass. It is expected that the first number of the Society's journal will be published in April.

THE Duchess of Albany has become Patroness of the Parkes Museum, of which the Duke of Albany was President until his death.

DURING the coming spring the construction of the North Sea and Baltic Canal will be begun along the whole line. There will be seven camps of workmen, and 4000 men employed.

THE Education Department of Scotland has issued a circular to the various School Boards in that country, in which are embodied the results of the careful inquiries that have recently been made into the existing system of elementary scientific teaching in Scottish schools. Technical instruction is discouraged in primary schools till the boys have reached the higher standards, and even then, the Department thinks, no attempt should be made unless skilled teachers and abundance of scientific apparatus are available. In most instances the thorough teaching of elementary science is beyond the reach of the primary schools; but by various School Boards uniting to employ a trained staff of teachers much of the difficulty will be overcome. School Boards are also recommended to seek the aid of local committees consisting of manufacturers who know what technical education is most needed in the district. The Department also recommends the extension of the system of giving evening lectures, which have been so successful in the past, and the charging of fees low enough to be within the reach of all. Nothing would tend to make technical education more popular than a small rate of charge, combined, as it should always be, with trained help and an abundant supply of scientific instruments.

A STRIKING new experiment, exhibiting the terribly explosive nature of chloride of nitrogen, is described by Prof. Victor Meyer in the current number of the *Berichte*. A few drops of the yellow chloride were prepared in the usual manner by inverting an exceptionally thin flask filled with chlorine gas in a leaden dish containing a solution of ammonium chloride. Instead, however of gently agitating the apparatus so as to cause the drops to fall into a smaller leaden capsule placed beneath the mouth of the flask, they were allowed to float freely upon the surface. The whole apparatus was then inclosed in a cover-box fitted with stout plate-glass sides, through the top of which was passed a bent pipette, turning up below just under the mouth of the flask and connected outside with a dropping funnel containing chloride of ammonium solution and a few drops of turpentine. When sufficient chloride of nitrogen had collected, the tap of the funnel was carefully turned so as to allow a little turpentine to slowly rise in the flask. After a moment or two it reached the surface and mingled with the chloride of nitrogen, causing a brilliant

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